



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/636,021	08/06/2003	David A. Palsulich	108298727US	1017

25096 7590 05/08/2006

PERKINS COIE LLP  
PATENT-SEA  
P.O. BOX 1247  
SEATTLE, WA 98111-1247

EXAMINER
----------

CHEN, ERIC BRICE

ART UNIT	PAPER NUMBER
----------	--------------

1765

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/636,021

Applicant(s)

PALSULICH ET AL.

Examiner

Eric B. Chen

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Mar. 1, 2006 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 1765

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-9, 11-17, and 19-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (U.S. Patent No. 6,054,373), in view of McNeilly et al. (U.S. Patent No. 5,762,755).

5. As to claim 1, Tomita discloses a method of processing a microfeature workpiece, comprising: supporting a microfeature workpiece (23) by an unheated support (22) in an interior of a processing chamber (21) (column 7, lines 57-61; Figure 5); contacting a surface of the microfeature workpiece (23) with an etchant liquid (column 7, lines 65-67; column 8, lines 1-2); heating the etchant liquid by delivering radiation from a radiation source (24) through the wall of the processing chamber to heat the etchant liquid (column 4, lines 18-22); controlling the radiation source to maintain a temperature of the etchant liquid at or above a target process temperature to etch the surface of the microfeature workpiece (column 8, lines 3-9). Although Tomita does not expressly disclose the step of removing the etched microfeature workpiece (23) from the processing chamber (21), this step is inherently present in the process.

6. Tomita does not expressly disclose a chamber having a polymeric wall; and the polymeric wall of the processing chamber being substantially non-reactive with the etchant liquid. However, Tomita discloses directing an external infrared heater (24) to heat a microfeature workpiece (23) (column 7, lines 62-62), contained in a quartz processing chamber (21) (column 7, line 59; Figure 5). Moreover, the microfeature workpiece (23) is immersed in either sulfuric or phosphoric acid (column 7, lines 65-57;

Art Unit: 1765

column 8, lines 1-2, lines 25-27). McNeilly teaches the general concept of using a fluoropolymer material in a vapor etching chamber (2) (column 10, lines 25-30; Figure 1) as a suitable material when both corrosion resistance (column 12, lines 42-44) and transparency to infrared wavelengths are required (column 12, lines 44-46). McNeilly also teaches the use of fluoropolymer-coated quartz in etching chambers (column 13, lines 6-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a chamber having a polymeric wall, such as a fluoropolymer. One who is skilled in the art would be motivated to use a polymeric wall, such as a fluoropolymer, which is both resistant to etching chemicals and transparent to infrared radiation. Moreover, because McNeilly teaches that the fluoropolymer is corrosion resistant (column 12, lines 42-44), the characteristic of the polymeric wall of the processing chamber being substantially non-reactive with the etchant liquid would naturally be encompassed.

7. Tomita does not expressly disclose delivering radiation through the polymeric wall; and the polymeric wall being more transmissive of an operative wavelength range of the radiation than the etchant liquid, thereby a temperature of the etchant liquid is increased more rapidly than a temperature of the polymeric wall. However, Tomita discloses heating the etchant liquid by delivering radiation from a radiation source (24) through the wall of the processing chamber to heat the etchant liquid (column 4, lines 18-22). McNeilly teaches or suggests a chamber with a polymeric wall (column 12, lines 42-46). McNeilly further teaches that the polymeric wall, a fluoropolymer, is transparent to infrared radiation (column 12, lines 44-46). Thus, by performing the

Art Unit: 1765

steps of the combined teachings, delivering radiation through the polymeric wall would naturally be encompassed. Furthermore, the characteristic of the polymeric wall being more transmissive of an operative wavelength range of the radiation than the etchant liquid, thereby a temperature of the etchant liquid is increased more rapidly than a temperature of the polymeric wall, would also be naturally encompassed.

8. As to claim 2, Tomita discloses adding the etchant liquid to the processing space at a first temperature that is below the target process temperature (column 4, lines 59-63).

9. As to claim 3, Tomita discloses that the radiation is delivered substantially uniformly across the surface of the microfeature workpiece (23) (column 7, lines 62-64; column 8, lines 3-9).

10. As to claim 4, Tomita discloses that the radiation comprises infrared radiation (column 7, lines 57-61).

11. As to claim 5, Tomita discloses enclosing the microfeature workpiece (23) within the interior of the processing chamber (21) (column 7, lines 57-61; Figure 5).

12. As to claim 6, Tomita discloses that a temperature of the wall of the processing chamber is no greater than the temperature of the etchant liquid when the etchant liquid is at or above the target process temperature (column 7, lines 62-64, lines 65-67; column 8, lines 1-2). The infrared heater (24) is directed at heating microfeature workpiece (23) (column 7, lines 62-62), rather than the quartz walls of processing chamber (21) (column 7, line 59).

Art Unit: 1765

13. As to claim 7, Tomita discloses that processing chamber includes a base (22), a temperature of the base of the processing chamber being no greater than the temperature of the etchant liquid when the etchant liquid is at or above the target process temperature (column 7, lines 62-64, lines 65-67; column 8, lines 1-2). The infrared heater (24) is directed at heating microfeature workpiece (23) (column 7, lines 62-62), rather than the quartz base (22) (column 7, line 60).

14. As to claim 8, Tomita discloses that the radiation is substantially the only heat source for heating the etchant liquid from a first temperature to the target process temperature, which is higher than the first temperature (column 7, lines 62-64). The microfeature workpiece (23) is heated by the infrared heater (24), resulting in the conductive heating of the etchant liquid (column 7, lines 62-64).

15. As to claim 9, Tomita does not expressly disclose an inner surface of the processing chamber comprises a fluoropolymer, further comprising contacting the inner surface of the processing chamber with the etchant liquid. However, Tomita discloses directing an external infrared heater (24) to heat a microfeature workpiece (23) (column 7, lines 62-62), contained in a quartz processing chamber (21) (column 7, line 59; Figure 5). Moreover, the microfeature workpiece (23) is immersed in either sulfuric or phosphoric acid (column 7, lines 65-57; column 8, lines 1-2, lines 25-27). McNeilly teaches the general concept of using a fluoropolymer material in a vapor etching chamber (2) (column 10, lines 25-30; Figure 1) as a suitable material when both corrosion resistance (column 12, lines 42-44) and transparency to infrared wavelengths are required (column 12, lines 44-46). McNeilly also teaches the use of fluoropolymer-

Art Unit: 1765

coated quartz in etching chambers (column 13, lines 6-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the inner surface of the processing chamber comprises a fluoropolymer, further comprising contacting the inner surface of the processing chamber with the etchant liquid. One who is skilled in the art would be motivated to use a material, such as a fluoropolymer, which is both resistant to etching chemicals and transparent to infrared radiation.

16. As to claims 11, Tomita discloses a method of processing a microfeature workpiece comprising: positioning a microfeature workpiece (23) on an unheated support (22) in an interior of a processing chamber (21) (column 7, lines 57-61; Figure 5); enclosing the microfeature workpiece (23) within the interior of the processing chamber (21) (Figure 5); contacting a surface of the microfeature workpiece (23) with an etchant liquid at a first temperature (column 7, lines 62-64); heating the etchant liquid from the first temperature to a second temperature using an infrared heat source (24) positioned entirely outside the enclosed processing chamber (21), the second temperature being higher than the first temperature (column 7, lines 62-64), and the second temperature promoting etching of a surface of the microfeature workpiece (column 5, lines 49-61); and etching the surface of the microfeature workpiece with the etchant liquid at or above the second temperature (column 5, lines 49-61).

17. Tomita does not expressly disclose a processing chamber having a polymeric wall with an inner surface; and the etchant liquid being substantially non-reactive with the inner surface of the processing chamber. However, Tomita discloses directing an



Art Unit: 1765

external infrared heater (24) to heat a microfeature workpiece (23) (column 7, lines 62-62), contained in a quartz processing chamber (21) (column 7, line 59; Figure 5).

Moreover, the microfeature workpiece (23) is immersed in either sulfuric or phosphoric acid (column 7, lines 65-57; column 8, lines 1-2, lines 25-27). McNeilly teaches the general concept of using a fluoropolymer material in a vapor etching chamber (2) (column 10, lines 25-30; Figure 1) as a suitable material when both corrosion resistance (column 12, lines 42-44) and transparency to infrared wavelengths are required (column 12, lines 44-46). McNeilly also teaches the use of fluoropolymer-coated quartz in etching chambers (column 13, lines 6-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polymeric wall with an inner surface. One who is skilled in the art would be motivated to use a material, such as a fluoropolymer, which is both resistant to etching chemicals and transparent to infrared radiation. Moreover, because McNeilly teaches that the fluoropolymer is corrosion resistant (column 12, lines 42-44), the characteristic of the etchant liquid being substantially non-reactive with the inner surface of the processing chamber, would naturally be encompassed.

18. Tomita does not expressly disclose heating the etchant liquid through the polymeric wall; and etchant liquid being more absorptive of radiation from the infrared heat source than the polymeric wall, thereby the etchant liquid is heated more rapidly than the polymeric wall of the processing chamber. However, Tomita discloses heating the etchant liquid by delivering radiation from a radiation source (24) through the wall of the processing chamber to heat the etchant liquid (column 4, lines 18-22). McNeilly

Art Unit: 1765

teaches or suggests a chamber with a polymeric wall (column 12, lines 42-46).

McNeilly further teaches that the polymeric wall, a fluoropolymer, is transparent to infrared radiation (column 12, lines 44-46). Thus, by performing the steps of the combined teachings, heating the etchant liquid through the polymeric wall, would naturally be encompassed. Furthermore, the characteristic of the etchant liquid being more absorptive of radiation from the infrared heat source than the polymeric wall, thereby the etchant liquid is heated more rapidly than the polymeric wall of the processing chamber, would also be naturally encompassed.

19. Moreover, Tomita discloses that the microfeature workpiece (23) is silicon (column 7, line 62), immersed in phosphoric acid (column 8, lines 25-27), heated to a temperature between 150°C to 300°C (Figure 3). Yokomizo (U.S. Patent No. 6,399,517), cited to support inherency, teaches that exposure of silicon to phosphoric acid at a temperature range of 160°C to 180°C results in silicon etching (column 1, lines 13-24). Therefore, the steps of promoting etching of a surface of the microfeature workpiece at the second temperature; and etching the surface of the microfeature workpiece with the etchant liquid at or above the second temperature are inherently accomplished by Tomita's method.

20. As to claim 12, Tomita discloses that the radiation is delivered substantially uniformly across the surface of the microfeature workpiece (column 7, lines 62-64).

21. As to claim 13, Tomita discloses that the infrared radiation comprises near infrared radiation (column 7, lines 56-58). Tomita's disclosure of infrared radiation is

Art Unit: 1765

presumed to encompass all wavelengths of the infrared spectrum, including near infrared radiation.

22. As to claim 14, Tomita discloses that a temperature of the wall of the processing chamber is no greater than the temperature of the etchant liquid when the etchant liquid is at or above the target process temperature (column 7, lines 62-64, lines 65-67; column 8, lines 1-2). The infrared heater (24) is directed at heating microfeature workpiece (23) (column 7, lines 62-62), rather than the quartz walls of processing chamber (21) (column 7, line 59).

23. As to claim 15, Tomita discloses that the processing chamber includes a base (22), a temperature of the base of the processing chamber being no greater than the temperature of the etchant liquid when the etchant liquid is at or above the second temperature (column 7, lines 62-64, lines 65-67; column 8, lines 1-2). The infrared heater (24) is directed at heating microfeature workpiece (23) (column 7, lines 62-62), rather than the quartz base (22) (column 7, line 60).

24. As to claim 16, Tomita discloses that the infrared radiation is substantially the only heat source for heating the etchant liquid from the first temperature to the second temperature (column 7, lines 65-67; column 8, lines 1-2).

25. As to claim 17, Tomita does not expressly disclose that the inner surface of the processing chamber comprises a fluoropolymer, further comprising contacting the inner surface of the processing chamber with the etchant liquid. However, Tomita discloses directing an external infrared heater (24) to heat a microfeature workpiece (23) (column 7, lines 62-62), contained in a quartz processing chamber (21) (column 7, line 59;

Art Unit: 1765

Figure 5). Moreover, the microfeature workpiece (23) is immersed in either sulfuric or phosphoric acid (column 7, lines 65-57; column 8, lines 1-2, lines 25-27). McNeilly teaches the general concept of using a fluoropolymer material in a vapor etching chamber (2) (column 10, lines 25-30; Figure 1) as a suitable material when both corrosion resistance (column 12, lines 42-44) and transparency to infrared wavelengths are required (column 12, lines 44-46). McNeilly also teaches the use of fluoropolymer-coated quartz in etching chambers (column 13, lines 6-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form inner surface of the processing chamber with a fluoropolymer, further comprising contacting the inner surface of the processing chamber with the etchant liquid. One who is skilled in the art would be motivated to use a material, such as a fluoropolymer, which is both resistant to etching chemicals and transparent to infrared radiation.

26. As to claim 19, Tomita discloses a method of processing a microfeature workpiece, comprising: supporting a microfeature workpiece (23) with an unheated support (22) in an interior of a processing chamber (23) (column 7, lines 57-61; Figure 5); contacting a surface of the microfeature workpiece (23) with a processing fluid (column 7, lines 65-67; column 8, lines 1-2; Figure 5); delivering infrared radiation through the wall of the processing chamber to heat the processing fluid from a first temperature to a higher second temperature that promotes processing of the surface of the microfeature workpiece (column 7, lines 62-67; column 8, lines 1-2); and maintaining a temperature of the processing fluid at or above the second temperature for a process period to process the surface of the microfeature workpiece (23) (column

Art Unit: 1765

8, lines 3-9), a temperature of the wall of the processing chamber being no greater than the temperature of the processing fluid during the process period (column 7, lines 62-64, lines 65-67; column 8, lines 1-2).

27. Tomita does not expressly disclose a processing chamber having a polymeric wall. However, Tomita discloses directing an external infrared heater (24) to heat a microfeature workpiece (23) (column 7, lines 62-62), contained in a quartz processing chamber (21) (column 7, line 59; Figure 5). Moreover, the microfeature workpiece (23) is immersed in either sulfuric or phosphoric acid (column 7, lines 65-57; column 8, lines 1-2, lines 25-27). McNeilly teaches the general concept of using a fluoropolymer material in a vapor etching chamber (2) (column 10, lines 25-30; Figure 1) as a suitable material when both corrosion resistance (column 12, lines 42-44) and transparency to infrared wavelengths are required (column 12, lines 44-46). McNeilly also teaches the use of fluoropolymer-coated quartz in etching chambers (column 13, lines 6-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polymeric wall with an inner surface. One who is skilled in the art would be motivated to use a material, such as a fluoropolymer, which is both resistant to etching chemicals and transparent to infrared radiation.

28. Tomita does not expressly disclose delivering radiation through the polymeric wall; and the polymeric wall being more infrared transparent than the processing fluid, thereby the processing fluid is heated more rapidly than the polymeric wall. However, Tomita discloses heating the etchant liquid by delivering radiation from a radiation source (24) through the wall of the processing chamber to heat the etchant liquid

Art Unit: 1765

(column 4, lines 18-22). McNeilly teaches or suggests a chamber with a polymeric wall (column 12, lines 42-46). McNeilly further teaches that the polymeric wall, a fluoropolymer, is transparent to infrared radiation (column 12, lines 44-46). Thus, by performing the steps of the combined teachings, delivering radiation through the polymeric wall would naturally be encompassed. Furthermore, the characteristic of the polymeric wall being more infrared transparent than the processing fluid, thereby the processing fluid is heated more rapidly than the polymeric wall, would also be naturally encompassed.

29. As to claim 20, Tomita does not expressly disclose the processing fluid comprises an etchant liquid and processing the surface of the microfeature workpiece comprises etching the surface of the microfeature workpiece. However, Tomita discloses the microfeature workpiece (23) is silicon (column 7, line 62), immersed in phosphoric acid (column 8, lines 25-27), heated to a temperature between 150°C to 300°C (Figure 3). Yokomizo (U.S. Patent No. 6,399,517), cited to support inherency, teaches that exposure of silicon to phosphoric acid at a temperature range of 160°C to 180°C results in silicon etching (column 1, lines 13-24). Therefore, processing fluid is inherently an etchant liquid and the step of processing the surface of the microfeature workpiece comprises etching the surface of the microfeature workpiece is inherently accomplished by Tomita's method.

30. As to claim 21, Tomita does not expressly disclose that an inner surface of the processing chamber comprises a fluoropolymer, further comprising contacting the inner surface of the processing chamber with the etchant liquid. However, Tomita discloses

Art Unit: 1765

directing an external infrared heater (24) to heat a microfeature workpiece (23) (column 7, lines 62-62), contained in a quartz processing chamber (21) (column 7, line 59; Figure 5). Moreover, the microfeature workpiece (23) is immersed in either sulfuric or phosphoric acid (column 7, lines 65-57; column 8, lines 1-2, lines 25-27). McNeilly teaches the general concept of using a fluoropolymer material in a vapor etching chamber (2) (column 10, lines 25-30; Figure 1) as a suitable material when both corrosion resistance (column 12, lines 42-44) and transparency to infrared wavelengths are required (column 12, lines 44-46). McNeilly also teaches the use of fluoropolymer-coated quartz in etching chambers (column 13, lines 6-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the inner surface of the processing chamber comprising a fluoropolymer, further comprising contacting the inner surface of the processing chamber with the etchant liquid. One who is skilled in the art would be motivated to use a material, such as a fluoropolymer, which is both resistant to etching chemicals and transparent to infrared radiation.

31. As to claim 22, Tomita discloses adding the processing fluid to the processing space at an introduction temperature that is below the second temperature (column 4, lines 59-63).

32. As to claim 23, Tomita discloses adding the processing fluid to the processing space at the first temperature that is below the second temperature (column 4, lines 59-63).

Art Unit: 1765

33. As to claim 24, Tomita discloses that the radiation is delivered substantially uniformly across the surface of the microfeature workpiece (23) (column 7, lines 62-64; column 8, lines 3-9).

34. As to claim 25, Tomita discloses that the radiation comprises infrared radiation (column 7, lines 57-61).

35. As to claim 26, Tomita discloses enclosing the microfeature workpiece (23) within the interior of the processing chamber (21) (column 7, lines 57-61; Figure 5).

36. As to claim 27, Tomita discloses that the radiation is substantially the only heat source for heating the processing fluid from the first temperature to the second temperature (column 7, lines 62-64).

***Claim Rejections - 35 USC § 103***

37. Claims 10, 18, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita in view of Yokomizo et al. (U.S. Patent No. 6,399,517).

38. As to claims 10, 18, and 28, Tomita does not expressly disclose etching the surface of the microfeature workpiece yields a resultant etchant, the method further comprising determining at least one chemical property of the microfeature workpiece by chemically analyzing the resultant etchant. However, Tomita discloses that the silicon microfeature workpiece (23) is silicon (column 7, line 62) and immersed in phosphoric acid (column 8, lines 25-27). Yokomizo teaches that when etching silicon with a phosphate etchant, the concentration of silicon in the phosphate increases, and that the solution must be periodically changed (column 1, lines 34-40). Yokomizo discloses a



Art Unit: 1765

processing chamber (10) for etching microfeature workpiece (W) in etchant liquid (E), which contains a concentration sensor (50) (column 4, lines 54-59) to detect silicon concentration in the etchant liquid (column 7, lines 15-22). Moreover, when the silicon concentration reaches a predetermined level, this signal can either terminate the etching process (column 7, lines 15-22) or trigger replacement of the etchant liquid (column 7, lines 43-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the step of determining at least one chemical property of the microfeature workpiece by chemically analyzing the resultant etchant. One who is skilled the art would be motivated to determine the completion of the etching process or to determine when the etchant liquid should be replenished.

### ***Response to Arguments***

39. Applicants arguments' (Applicants' Remarks, pages 9-10), filed Mar. 1, 2006, with respect to the rejection of claims 1-8 under 35 U.S.C. 102(b) as anticipated by Tomita have been fully considered and are persuasive. The Tomita reference does not teach or suggest a "polymeric wall." Therefore, the 35 U.S.C. 102(b) rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of McNeilly.

40. Applicants arguments' (Applicants' Remarks, page 10), filed Mar. 1, 2006, with respect to modification of the Tomita reference to include a "polymeric wall" have been fully considered, but they are not persuasive.

Art Unit: 1765

41. First, Applicants argues that “Tomita actually teaches away from using a processing chamber with a polymeric wall... Tomita teaches etching a silicon wafer at a temperature as high as possible so long as the temperature is below the boiling point of the etchant” (page 10, third paragraph). However, the Tomita reference does not support this argument. Tomita discloses a processing temperature of “200°C or higher for cleaning silicon substrates” (column 8, lines 30-33) and claims a temperature range for “sulfuric acid or phosphoric acid heated to 200°C or higher and lower than the boiling point of said chemical agent” (claim 5, column 10, lines 10-13). Thus, the lower limit of the temperature range is within the “maximum service temperature of FEP...about 204°C” (page 10, third paragraph). Although Tomita discloses an example with a temperature of about 289°C to 350°C when sulfuric acid is used as an etchant (column 5, lines 61-65), the example serves as a single embodiment, rather than a limitation of Tomita’s disclosure.

42. Second, it is noted that the features upon which Applicant relies (i.e., FEP polymeric material) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

43. Applicants’ remaining arguments (Applicants’ Remarks, pages 10-11), have been noted, but they are not persuasive, as discussed above.

Art Unit: 1765

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Chen whose telephone number is (571) 272-2947. The examiner can normally be reached on Monday through Friday, 8AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EBC  
April 24, 2006



NADINE G. NORTON  
SUPERVISORY PATENT EXAMINER  
